[JP,05-220225,A]

* NOTICES *
Japan Patent Office is not responsible for any damages caused by the use of this translation.
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] It is the catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part. The becoming reinforcement layer is infixed and this point does not have the above-mentioned reinforcement layer. between inner tube parts and outer tube parts -- much more -- since -- further said reinforcement layer [in / this catheter has a point and the body section and / this body section] The catheter characterized by consisting of a wire layer knit by ** by the side of the tip in the wire layer knit densely and the body section by the side of the end face in the body section.
[Claim 2] It is the catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part. The becoming reinforcement layer is infixed and this point does not have the above-mentioned reinforcement layer. between inner tube parts and outer tube parts -- much more -- since -- further said reinforcement layer [in / this catheter has a point and the body section and / this body section] The catheter characterized by consisting of a wire layer in which the end face side in the body section was knit, and a wire layer in which the tip side in the body section is not knit.
[Claim 3] between inner tube parts and outer tube parts -- much more -- since -- the catheter which the becoming reinforcement layer is infixed, and this point does not have the above-mentioned reinforcement layer, but is further characterized by to fix the edge by the side of the tip of said reinforcement layer to an inner tube part. [in / it is the catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part, and this catheter has a point and the body section, and / this body section]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to a catheter.
[0002]
[Description of the Prior Art] The catheter 1 as shown in drawing 1 is led to a guidewire etc., and is inserted into coelomata, such as a blood vessel, and attainment of it to the target part is enabled, the direction of the tip being controlled.
[0003] So, this catheter 1 is required to have the torsional rigidity which becomes size so that it

Appendix C

may be possible to twist the base of the body section 2 and to orient that point 3. moreover, the point 3 -- the purpose part -- insertion -- it is possible to give an easy configuration easily, and flexibility is required of a point 3 so that the point 3 at the time of insertion may deform easily along with insertion path change of a blood vessel etc. and damage may not be done to walls, such as a blood vessel.

[0004] drawing 2 -- a point -- flexibility -- having -- and -- size -- the conventional catheter 4 which comes to have torsional rigidity is shown -- it is a fracture Fig. a part. The catheter 4 forms the body section 8 which is torsional rigidity and which becomes size by infixing the wire layer 7 between the flexible inner tube part 5 and the flexible outer tube part 6. Furthermore, the comparatively flexible point 9 is connected to the edge at which this catheter 4 removed the outer tube part 6 of the above-mentioned body section 8 in part.

[0005] drawing 3 -- a point -- flexibility -- having -- and -- size -- other conventional catheters 10 which come to have torsional rigidity are shown -- it is a fracture Fig. a part. After this catheter 10 had the 1st wire layer 12 formed from the end face of the flexible inner tube part 11 to tip this side, and it turns it up from that tip this side and it has the 2nd wire layer 13 again formed to a end face, it is having the flexible outer tube part 14 covered by the top face of an inner tube part 11 and both the wire layers 12 and 13.

[0006]

[Problem(s) to be Solved by the Invention] However, if it is in the above-mentioned catheter 4, a level difference is produced in the connection of the body section 8 and a point 9, it is difficult to perform insertion to a blood vessel etc. smoothly, and there is a possibility of producing a thrombus. Moreover, there is a possibility of producing balking among both, according to the faulty connection of the body section 8 and a point 9.

[0007] Moreover, since the reinforcement layer which consists of the 1st wire layer 12 and the 2nd wire layer 13 of a bilayer between the inner tube parts 11 and outer tube parts 14 from which the above-mentioned catheter 10 constitutes the body section is infixed, a catheter bore serves as smallness under the predetermined catheter outer diameter in which the thickness of a reinforcement layer becomes settled with insertion way bores, such as a blood vessel in which a large next door and a catheter are inserted. Moreover, since the thickness of the above-mentioned reinforcement layer is size, the level difference which comes size comparatively between the catheter outer diameter of the body section and the catheter outer diameter of a point is produced, and it becomes difficult to perform insertion to a blood vessel etc. Moreover, the above-mentioned catheter 10 is the top face of the inner tube part 11 which constitutes the body section, since it forms by turning up the 1st wire layer 12 and the 2nd wire layer 13, cannot form the whole continuously and cannot obtain the base material for catheters.

[0008] Moreover, while carrying out a loose thing for change of the torsional rigidity of the body section and a point and making quick responsibility of the point to rotation of the body section in order to improve the insertion workability into a blood vessel coelome if it is in a catheter, to enable prevention of sudden a point bending to the body section is desired.

[0009] While the body section and a point are really formed, torsional rigidity has flexibility in a point greatly and abbreviation equalization of the outer diameter is carried out by the body section and the point, this invention While being able to form the bore which becomes size comparatively and making quick further responsibility of a point [as opposed to rotation of the body section for change of the torsional rigidity of the body section and a point] as a loose thing The purpose is carried out for offering the catheter which can prevent that sudden a point bends to the body section.

Appendix C

[0010]
[Means for Solving the Problem] This invention according to claim 1 is a catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part. The becoming reinforcement layer is infixed and this point does not have the above-mentioned reinforcement layer. between inner tube parts and outer tube parts -- much more -- since -- further said reinforcement layer [in / this catheter has a point and the body section and / this body section] It is made to consist of a wire layer knit by ** by the side of the tip in the wire layer knit densely and the body section by the side of the end face in the body section.
[0011] This invention according to claim 2 is a catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part. The becoming reinforcement layer is infixed and this point does not have the above-mentioned reinforcement layer. between inner tube parts and outer tube parts -- much more -- since -- further said reinforcement layer [in / this catheter has a point and the body section and / this body section] It is made to consist of a wire layer in which the end face side in the body section was knit, and a wire layer in which the tip side in the body section is not knit.
[0012] between inner tube parts and outer tube parts -- much more -- since -- the becoming reinforcement layer is infixed, this point does not have the above-mentioned reinforcement layer, but the edge by the side of the tip of said reinforcement layer is being further fixed to the inner tube part. [in / this invention according to claim 3 is a catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part, and this catheter has a point and the body section, and / this body section] In addition, "immobilization" said here shall paste up the edge by the side of the tip of a reinforcement layer on an inner tube part with adhesives, and also laying under the inner tube welding and the wire layer which is a reinforcement layer further at an inner tube, applying heat shall include it.
[0013]
[Function] According to this invention, there is the operation effectiveness of the following ** - **.
** between inner tube parts and outer tube parts -- much more -- since -- since the becoming reinforcement layer is infixed and it was made for this point not to have the above-mentioned reinforcement layer, while the body section and a point are really formed, torsional rigidity has flexibility in a point greatly and an outer diameter is equalized by the body section and the point -- comparatively -- size -- it becomes possible to form a bore. [in / a catheter has a point and the body section and / this body section]
[0014] ** Since the reinforcement layer was constituted from two steps of what is not knit with two steps or the knit thing of ** as it is dense, while making quick responsibility of a point [as opposed to rotation of the body section for change of the torsional rigidity of the body section and a point] as a loose thing, it becomes possible to prevent that sudden a point bends to the body section.
[0015] ** The edge by the side of the tip of a reinforcement layer becomes possible [preventing the exfoliation from the inner tube part of the reinforcement layer edge in a manufacture phase] by coming to be fixed to an inner tube part.
[0016]
[Example] The top view showing the catheter 30 which drawing 4 (A) requires for the 1st example of this invention, the top view in which drawing 4 (B) exfoliates and shows a part of outer tube part of this catheter 30, drawing 5 (A), and (B) are the top views showing the

Appendix C

manufacture process of this catheter 30.
[0017] a catheter 30 is shown in drawing 4 (A) and (B) -- as -- die length L1 torsional rigidity -- comparatively -- smallness -- a point 31 and die length L2 torsional rigidity -- comparatively -- smallness -- the point 32 is really formed in shaft orientations. between the flexible inner tube part 33 in the body section 31 if it is in the above-mentioned catheter 30, and the flexible outer tube parts 34 -- much more -- since -- the becoming reinforcement layer 35 is infixed and the point 32 is formed according to the unification condition of an inner tube part 33 and an outer tube part 34. Here, the reinforcement layer 35 is formed from wire layer 35B knit by ** by the side of the point 32 in wire layer 35A knit densely and the body section 31 by the side of the anti-point 32 in the body section 31 (end face side). The edge by the side of the point 32 of wire layer 35B is pasted up on the inner tube part 33.
[0018] While according to the above-mentioned catheter 30 the body section 31 and a point 32 are really formed, torsional rigidity has flexibility in a point 32 greatly like said catheter 20 and abbreviation equalization of the outer diameter is carried out by the body section 31 and the point 32, it becomes possible to form the bore which becomes size comparatively. If it is in the above-mentioned catheter 30 especially, by wire layer 35B knit by ** by the side of the point 32 in wire layer 35A knit densely and the body section 31 by the side of the anti-point 32 in the body section 31 (end face side) Since the reinforcement layer 35 was formed, while making quick responsibility of the point [as opposed to rotation of the body section 31 for change of the torsional rigidity of the body section 31 and a point 32] 32 as a loose thing It becomes possible to prevent that sudden a point 32 bends to the body section 31, and to prevent lock out generating of a catheter building envelope based on bending. Moreover, if it was in the above-mentioned catheter 30, since the edge by the side of the point 32 of wire layer 35B was pasted up on the inner tube part 33, it becomes possible to prevent the exfoliation from the inner tube part 33 of wire layer 35B in a manufacture phase.
[0019] Next, the manufacture approach of the above-mentioned catheter 30 is explained. First, extrusion molding of the flexible inner tube part 33 is carried out. Next, as shown in drawing 5 (A), the reinforcement layer 35 is continuously formed further in the top face of an inner tube part 33. here -- wire layer 35A with the eye of a network dense [the reinforcement layer 35] (for example, ***pitch P1 = 1mm***), and the eye of a network -- ** (for example, ***pitch P2 =10mm***) -- ***wire layer 35B is formed by turns***. Next, after pasting up with adhesives the edge of wire layer 35B of the fixed section which should be removed on an inner tube part 33, a part of abbreviation center section of the above-mentioned wire layer 35B is removed as shown in drawing 5 (B). Next, extrusion molding of the flexible outer tube part 34 is carried out to the top face of an inner tube part 33 and the wire layers 35A and 35B. Next, abbreviation pars intermedia X1 of a part with wire layer 35A Abbreviation pars intermedia X2 of a part without the reinforcement layer 35 The catheter 30 which cuts, makes a part with the wire layers 35A and 35B the body section 31, and uses a part without the reinforcement layer 35 as a point 32 is obtained. It compares with cutting in the boundary section of a part with the reinforcement layer 35, and a part without the reinforcement layer 35, since the technical matter which was not seen at all conventionally [of "having cut the pars intermedia of a part with the reinforcement layer 35 and the pars intermedia of a part without the reinforcement layer 35"] was provided here, if it was in this example etc., and it is a catheter 30 about the reinforcement layer 35. Two duty continuation formation can be carried out and the merit according to rank that productivity can be improved is. That is, according to the above-mentioned manufacture approach, formation becomes possible continuously for high productivity about a catheter 30.

Appendix C

[0020] The top view showing the catheter 40 which drawing 6 (A) requires for the 2nd example of this invention, the top view in which drawing 6 (B) exfoliates and shows a part of outer tube part of this catheter 40, drawing 7 (A), and (B) are the top views showing the manufacture process of this catheter 40.

[0021] a catheter 40 is shown in drawing 6 (A) and (B) -- as -- die length L1 torsional rigidity -- comparatively -- size -- the body section 41 and die length L2 torsional rigidity -- comparatively -- smallness -- the point 42 is really formed in shaft orientations. between the flexible inner tube part 43 in the body section 41 if it is in the above-mentioned catheter 40, and the flexible outer tube parts 44 -- much more -- since -- the becoming reinforcement layer 45 is infixed and the point 42 is formed in an inner tube part 43 according to the unification condition of an outer tube part 44. Here, the reinforcement layer 45 is formed from wire layer 45A by which the anti-point 42 side (end face side) in the body section 41 was knit, and wire layer 45B by which the point 42 side in the body section 41 is not knit. The edge by the side of the point 42 of wire layer 45B is pasted up on the inner tube part 43. Wire layer 45B which is not knit is prepared in a catheter shaft and parallel as drawing 7 .

[0022] While according to the above-mentioned catheter 40 the body section 41 and a point 42 are really formed, torsional rigidity has flexibility in a point 42 greatly like said catheter 20 and abbreviation equalization of the outer diameter is carried out by the body section 41 and the point 42, it becomes possible to form the bore which becomes size comparatively. Moreover, like said catheter 30, while the above-mentioned catheter 40 makes quick responsibility of the point [as opposed to rotation of the body section 41 for change of the torsional rigidity of the body section 41 and a point 42] 42 as a loose thing, prevention of sudden a point 42 bending to the body section 41 of it is attained. Moreover, if it was in the above-mentioned catheter 40, since the edge by the side of the point 42 of wire layer 45B was pasted up on the inner tube part 43, it becomes possible to prevent the exfoliation from the inner tube part 43 of the edge of wire layer 45B in a manufacture phase.

[0023] Next, the manufacture approach of the above-mentioned catheter 40 is explained. First, extrusion molding of the flexible inner tube part 43 is carried out. Next, on an inner tube part 43, as shown in drawing 7 (A), the reinforcement layer 45 is formed further continuously. Here, wire layer 45A by which the reinforcement layer 45 was knit, and reinforcement layer 45B which is not knit are ***formed by turns***. Next, after pasting up with adhesives the edge of wire layer 45B of the fixed section which should be removed on an inner tube part 43, a part of abbreviation center section of the above-mentioned wire layer 45B is removed as shown in drawing 7 (B). Next, extrusion molding of the outer tube part 44 is carried out to the top face of an inner tube part 43 and the wire layers 45A and 45B. Next, abbreviation pars intermedia X1 of a part with wire layer 45A Abbreviation pars intermedia X2 of a part without the reinforcement layer 45 The catheter 40 which cuts, makes a part with the wire layers 45A and 45B the body section 41, and uses a part without the reinforcement layer 45 as a point 42 is obtained. It compares with cutting in the boundary section of a part with the reinforcement layer 45, and a part without the reinforcement layer 45, since the technical matter which was not seen at all conventionally [of "having cut the pars intermedia of a part with the reinforcement layer 45 and the pars intermedia of a part without the reinforcement layer 45"] was provided here, if it was in this example etc., and it is a catheter 40 about the reinforcement layer 45. Two duty continuation formation can be carried out and the merit according to rank that productivity can be improved is. That is, according to the above-mentioned manufacture approach, formation becomes possible continuously for high productivity about a catheter 40.

Appendix C

[0024]
[Effect of the Invention] While the body section and a point are really formed, torsional rigidity has flexibility in a point greatly and abbreviation equalization of the outer diameter is carried out by the body section and the point according to this invention as mentioned above While being able to form the bore which becomes size comparatively and making quick further responsibility of a point [as opposed to rotation of the body section for change of the torsional rigidity of the body section and a point] as a loose thing The catheter which can prevent that sudden a point bends to the body section can be offered.

PRIOR ART

[Description of the Prior Art] The catheter 1 as shown in drawing 1 is led to a guidewire etc., and is inserted into coelomata, such as a blood vessel, and attainment of it to the target part is enabled, the direction of the tip being controlled.
[0003] So, this catheter 1 is required to have the torsional rigidity which becomes size so that it may be possible to twist the base of the body section 2 and to orient that point 3. moreover, the point 3 -- the purpose part -- insertion -- it is possible to give an easy configuration easily, and flexibility is required of a point 3 so that the point 3 at the time of insertion may deform easily along with insertion path change of a blood vessel etc. and damage may not be done to walls, such as a blood vessel.
[0004] drawing 2 -- a point -- flexibility -- having -- and -- size -- the conventional catheter 4 which comes to have torsional rigidity is shown -- it is a fracture Fig. a part. The catheter 4 forms the body section 8 which is torsional rigidity and which becomes size by infixing the wire layer 7 between the flexible inner tube part 5 and the flexible outer tube part 6. Furthermore, the comparatively flexible point 9 is connected to the edge at which this catheter 4 removed the outer tube part 6 of the above-mentioned body section 8 in part.
[0005] drawing 3 -- a point -- flexibility -- having -- and -- size -- other conventional catheters 10 which come to have torsional rigidity are shown -- it is a fracture Fig. a part. After this catheter 10 had the 1st wire layer 12 formed from the end face of the flexible inner tube part 11 to tip this side, and it turns it up from that tip this side and it has the 2nd wire layer 13 again formed to a end face, it is having the flexible outer tube part 14 covered by the top face of an inner tube part 11 and both the wire layers 12 and 13.

EFFECT OF THE INVENTION

[Effect of the Invention] While the body section and a point are really formed, torsional rigidity has flexibility in a point greatly and abbreviation equalization of the outer diameter is carried out by the body section and the point according to this invention as mentioned above, The bore which becomes size comparatively can be formed, and further, while making quick responsibility of a point [as opposed to rotation of the body section for change of the torsional rigidity of the body section and a point] as a loose thing, the catheter which can prevent that sudden a point bends to the body section can be offered.

Appendix C

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, if it is in the above-mentioned catheter 4, a level difference is produced in the connection of the body section 8 and a point 9, it is difficult to perform insertion to a blood vessel etc. smoothly, and there is a possibility of producing a thrombus. Moreover, there is a possibility of producing balking among both, according to the faulty connection of the body section 8 and a point 9.

[0007] Moreover, since the reinforcement layer which consists of the 1st wire layer 12 and the 2nd wire layer 13 of a bilayer between the inner tube parts 11 and outer tube parts 14 from which the above-mentioned catheter 10 constitutes the body section is infixed, a catheter bore serves as smallness under the predetermined catheter outer diameter in which the thickness of a reinforcement layer becomes settled with insertion way bores, such as a blood vessel in which a large next door and a catheter are inserted. Moreover, since the thickness of the above-mentioned reinforcement layer is size, the level difference which comes size comparatively between the catheter outer diameter of the body section and the catheter outer diameter of a point is produced, and it becomes difficult to perform insertion to a blood vessel etc. Moreover, the above-mentioned catheter 10 is the top face of the inner tube part 11 which constitutes the body section, since it forms by turning up the 1st wire layer 12 and the 2nd wire layer 13, cannot form the whole continuously and cannot obtain the base material for catheters.

[0008] Moreover, while carrying out a loose thing for change of the torsional rigidity of the body section and a point and making quick responsibility of the point to rotation of the body section in order to improve the insertion workability into a blood vessel coelome if it is in a catheter, to enable prevention of sudden a point bending to the body section is desired.

[0009] While the body section and a point are really formed, torsional rigidity has flexibility in a point greatly and abbreviation equalization of the outer diameter is carried out by the body section and the point, this invention While being able to form the bore which becomes size comparatively and making quick further responsibility of a point [as opposed to rotation of the body section for change of the torsional rigidity of the body section and a point] as a loose thing The purpose is carried out for offering the catheter which can prevent that sudden a point bends to the body section.

MEANS

[Means for Solving the Problem] This invention according to claim 1 is a catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part. The becoming reinforcement layer is infixed and this point does not have the above-mentioned reinforcement layer. between inner tube parts and outer tube parts -- much more -- since -- further said reinforcement layer [in / this catheter has a point and the body section and / this body section] It is made to consist of a wire layer knit by ** by the side of the tip in the wire layer knit densely and the body section by the side of the end face in the body section.

[0011] This invention according to claim 2 is a catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part. The becoming reinforcement layer is infixed and this point does not have the above-mentioned reinforcement layer. between inner tube parts and outer tube parts -- much more -- since --

Appendix C

further said reinforcement layer [in / this catheter has a point and the body section and / this body section] It is made to consist of a wire layer in which the end face side in the body section was knit, and a wire layer in which the tip side in the body section is not knit.
[0012] between inner tube parts and outer tube parts -- much more -- since -- the becoming reinforcement layer is infixed, this point does not have the above-mentioned reinforcement layer, but the edge by the side of the tip of said reinforcement layer is being further fixed to the inner tube part. [in / this invention according to claim 3 is a catheter which consists of an inner tube part which results at a tip from a end face, and an outer tube part which covers this inner tube part, and this catheter has a point and the body section, and / this body section] In addition, "immobilization" said here shall paste up the edge by the side of the tip of a reinforcement layer on an inner tube part with adhesives, and also laying under the inner tube welding and the wire layer which is a reinforcement layer further at an inner tube, applying heat shall include it.

OPERATION

[Function] According to this invention, there is the operation effectiveness of the following ** - **.
** between inner tube parts and outer tube parts -- much more -- since -- since the becoming reinforcement layer is infixed and it was made for this point not to have the above-mentioned reinforcement layer, while the body section and a point are really formed, torsional rigidity has flexibility in a point greatly and an outer diameter is equalized by the body section and the point -- comparatively -- size -- it becomes possible to form a bore. [in / a catheter has a point and the body section and / this body section]
[0014] ** Since the reinforcement layer was constituted from two steps of what is not knit with two steps or the knit thing of ** as it is dense, while making quick responsibility of a point [as opposed to rotation of the body section for change of the torsional rigidity of the body section and a point] as a loose thing, it becomes possible to prevent that sudden a point bends to the body section.
[0015] ** The edge by the side of the tip of a reinforcement layer becomes possible [preventing the exfoliation from the inner tube part of the reinforcement layer edge in a manufacture phase] by coming to be fixed to an inner tube part.

EXAMPLE

[Example] The top view showing the catheter 30 which drawing 4 (A) requires for the 1st example of this invention, the top view in which drawing 4 (B) exfoliates and shows a part of outer tube part of this catheter 30, drawing 5 (A), and (B) are the top views showing the manufacture process of this catheter 30.
[0017] a catheter 30 is shown in drawing 4 (A) and (B) -- as -- die length L1 torsional rigidity -- comparatively -- smallness -- a point 31 and die length L2 torsional rigidity -- comparatively -- smallness -- the point 32 is really formed in shaft orientations. between the flexible inner tube part 33 in the body section 31 if it is in the above-mentioned catheter 30, and the flexible outer tube parts 34 -- much more -- since -- the becoming reinforcement layer 35 is infixed and the point 32 is formed according to the unification condition of an inner tube part 33 and an outer

Appendix C

tube part 34. Here, the reinforcement layer 35 is formed from wire layer 35B knit by ** by the side of the point 32 in wire layer 35A knit densely and the body section 31 by the side of the anti-point 32 in the body section 31 (end face side). The edge by the side of the point 32 of wire layer 35B is pasted up on the inner tube part 33.

[0018] While according to the above-mentioned catheter 30 the body section 31 and a point 32 are really formed, torsional rigidity has flexibility in a point 32 greatly like said catheter 20 and abbreviation equalization of the outer diameter is carried out by the body section 31 and the point 32, it becomes possible to form the bore which becomes size comparatively. If it is in the above-mentioned catheter 30 especially, by wire layer 35B knit by ** by the side of the point 32 in wire layer 35A knit densely and the body section 31 by the side of the anti-point 32 in the body section 31 (end face side) Since the reinforcement layer 35 was formed, while making quick responsibility of the point [as opposed to rotation of the body section 31 for change of the torsional rigidity of the body section 31 and a point 32] 32 as a loose thing It becomes possible to prevent that sudden a point 32 bends to the body section 31, and to prevent lock out generating of a catheter building envelope based on bending. Moreover, if it was in the above-mentioned catheter 30, since the edge by the side of the point 32 of wire layer 35B was pasted up on the inner tube part 33, it becomes possible to prevent the exfoliation from the inner tube part 33 of wire layer 35B in a manufacture phase.

[0019] Next, the manufacture approach of the above-mentioned catheter 30 is explained. First, extrusion molding of the flexible inner tube part 33 is carried out. Next, as shown in drawing 5 (A), the reinforcement layer 35 is continuously formed further in the top face of an inner tube part 33. here -- wire layer 35A with the eye of a network dense [the reinforcement layer 35] (for example, ***pitch P1 = 1mm***), and the eye of a network -- ** (for example, ***pitch P2 =10mm***) -- ***wire layer 35B is formed by turns***. Next, after pasting up with adhesives the edge of wire layer 35B of the fixed section which should be removed on an inner tube part 33, a part of abbreviation center section of the above-mentioned wire layer 35B is removed as shown in drawing 5 (B). Next, extrusion molding of the flexible outer tube part 34 is carried out to the top face of an inner tube part 33 and the wire layers 35A and 35B. Next, abbreviation pars intermedia X1 of a part with wire layer 35A Abbreviation pars intermedia X2 of a part without the reinforcement layer 35 The catheter 30 which cuts, makes a part with the wire layers 35A and 35B the body section 31, and uses a part without the reinforcement layer 35 as a point 32 is obtained. It compares with cutting in the boundary section of a part with the reinforcement layer 35, and a part without the reinforcement layer 35, since the technical matter which was not seen at all conventionally [of "having cut the pars intermedia of a part with the reinforcement layer 35 and the pars intermedia of a part without the reinforcement layer 35"] was provided here, if it was in this example etc., and it is a catheter 30 about the reinforcement layer 35. Two duty continuation formation can be carried out and the merit according to rank that productivity can be improved is. That is, according to the above-mentioned manufacture approach, formation becomes possible continuously for high productivity about a catheter 30.

[0020] The top view showing the catheter 40 which drawing 6 (A) requires for the 2nd example of this invention, the top view in which drawing 6 (B) exfoliates and shows a part of outer tube part of this catheter 40, drawing 7 (A), and (B) are the top views showing the manufacture process of this catheter 40.

[0021] a catheter 40 is shown in drawing 6 (A) and (B) -- as -- die length L1 torsional rigidity -- comparatively -- size -- the body section 41 and die length L2 torsional rigidity -- comparatively -- smallness -- the point 42 is really formed in shaft orientations. between the flexible inner tube

Appendix C

part 43 in the body section 41 if it is in the above-mentioned catheter 40, and the flexible outer tube parts 44 -- much more -- since -- the becoming reinforcement layer 45 is infixed and the point 42 is formed in an inner tube part 43 according to the unification condition of an outer tube part 44. Here, the reinforcement layer 45 is formed from wire layer 45A by which the anti-point 42 side (end face side) in the body section 41 was knit, and wire layer 45B by which the point 42 side in the body section 41 is not knit. The edge by the side of the point 42 of wire layer 45B is pasted up on the inner tube part 43. Wire layer 45B which is not knit is prepared in a catheter shaft and parallel as drawing 7 .

[0022] While according to the above-mentioned catheter 40 the body section 41 and a point 42 are really formed, torsional rigidity has flexibility in a point 42 greatly like said catheter 20 and abbreviation equalization of the outer diameter is carried out by the body section 41 and the point 42, it becomes possible to form the bore which becomes size comparatively. Moreover, like said catheter 30, while the above-mentioned catheter 40 makes quick responsibility of the point [as opposed to rotation of the body section 41 for change of the torsional rigidity of the body section 41 and a point 42] 42 as a loose thing, prevention of sudden a point 42 bending to the body section 41 of it is attained. Moreover, if it was in the above-mentioned catheter 40, since the edge by the side of the point 42 of wire layer 45B was pasted up on the inner tube part 43. it becomes possible to prevent the exfoliation from the inner tube part 43 of the edge of wire layer 45B in a manufacture phase.

[0023] Next, the manufacture approach of the above-mentioned catheter 40 is explained. First, extrusion molding of the flexible inner tube part 43 is carried out. Next, on an inner tube part 43, as shown in drawing 7 (A), the reinforcement layer 45 is formed further continuously. Here, wire layer 45A by which the reinforcement layer 45 was knit, and reinforcement layer 45B which is not knit are ***formed by turns***. Next, after pasting up with adhesives the edge of wire layer 45B of the fixed section which should be removed on an inner tube part 43, a part of abbreviation center section of the above-mentioned wire layer 45B is removed as shown in drawing 7 (B). Next, extrusion molding of the outer tube part 44 is carried out to the top face of an inner tube part 43 and the wire layers 45A and 45B. Next, abbreviation pars intermedia X1 of a part with wire layer 45A Abbreviation pars intermedia X2 of a part without the reinforcement layer 45 The catheter 40 which cuts, makes a part with the wire layers 45A and 45B the body section 41, and uses a part without the reinforcement layer 45 as a point 42 is obtained. It compares with cutting in the boundary section of a part with the reinforcement layer 45, and a part without the reinforcement layer 45, since the technical matter which was not seen at all conventionally [of "having cut the pars intermedia of a part with the reinforcement layer 45 and the pars intermedia of a part without the reinforcement layer 45"] was provided here, if it was in this example etc., and it is a catheter 40 about the reinforcement layer 45. Two duty continuation formation can be carried out and the merit according to rank that productivity can be improved is. That is, according to the above-mentioned manufacture approach, formation becomes possible continuously for high productivity about a catheter 40.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing 1 is the top view showing a common catheter.

[Drawing 2] drawing 2 shows the catheter concerning the conventional example -- it is a fracture

Appendix C

Fig. a part.
[Drawing 3] drawing 3 shows the catheter concerning other conventional examples -- it is a fracture Fig. a part.
[Drawing 4] They are the top view showing the catheter which drawing 4 (A) requires for the 1st example of this invention, and the top view in which drawing 4 (B) exfoliates and shows a part of outer tube part of this catheter.
[Drawing 5] Drawing 5 (A) and (B) are the top views showing the manufacture process of this catheter.
[Drawing 6] They are the top view showing the catheter which drawing 6 (A) requires for the 2nd example of this invention, and the top view in which drawing 6 (B) exfoliates and shows a part of outer tube part of this catheter.
[Drawing 7] Drawing 7 (A) and (B) are the top views showing the manufacture process of this catheter.
[Description of Notations]
30 40 Catheter
31 41 Body section
32 42 Point
33 43 Inner tube part
34 44 Outer tube part
35 45 Reinforcement layer
35A, 35B, 45A, 45B Wire layer

[Translation done.]

Appendix C